N.A.C.A. BULLETIN

In Two Sections

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TECHNIQUES FOR BUDGETING ADMINISTRATIVE AND COMMERCIAL EXPENSES

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Recognizing four types of administrative, selling, and general expense, amenable to four distinct analytic approaches for budgeting purposes, the author of this paper takes up each in turn, indicates the respective type characteristics and proposes and illustrates a method of budgeting for each type tailored to these characteristics.

IN budgeting administrative and commercial expense there appears to be considerably less standard practice than in most other fields of budgetary control. In many respects, it seems that industry has concentrated its scientific cost control endeavors in the factory. As a result, administrative and commercial expense represents a comparatively new field of budgetary control, one in which there is much opportunity for the development of new techniques. However, as a general rule, the most difficult problems with respect to "A and C" budgets are not those of a procedural nature, i.e., the mechanics of budget preparation, the use of budgets as a means of expense forecasting, and the establishment of reports for the control of actual expenses to approved budgets. These procedural problems ordinarily can be solved by the adaptation of techniques successfully tested and used in other fields of budgetary control and cost analysis.

The real problem and the real challenge in budgeting administrative and commercial expenses lies in the analysis and evaluation of these expenses. Generally speaking, they do not lend themselves to the same type of analysis and control as direct labor and indirect manufacturing expense. Furthermore, within the scope of "A and C" budgets there are many different types of expense, each of which requires a somewhat different technique or approach in so far as its evaluation is concerned. Accordingly, this paper is devoted primarily to the problems of evaluation and analysis rather than to procedural matters.

What Expenses Are Included?

For convenience, the terms administrative budgets and administrative expenses will be used throughout the remainder of this paper as relating to all expenses of an administrative, selling, and engineering nature. Undoubtedly considerable variation exists among companies with respect to classification of administrative expenses. Nevertheless, the different types of expense listed below are normally considered within the scope of administrative budgets and may be cited as a reasonably comprehensive list:

Executive offices	Industrial relations	Advertising
Public relations	Purchasing	Sales promotion
Legal	Finance	Product service
Engineering	Accounting	Warehousing
Research	Office services	Stock control
		Shipping

The inclusion of industrial relations and purchasing in the above list may raise a question. In most companies these expenses are perhaps considered a part of manufacturing operations and, therefore, included in manufacturing overhead budgets. However, larger companies which have purchasing and industrial relations central staff activities may include the expense of these staff organizations in their administrative budgets. Under such an arrangement, it is also advisable that the company executives responsible for these functions in the central staff develop standards for the cost of their function in decentralized operations and periodically review actual costs against these standards.

Responsibility Must Be Fixed and Acknowledged

In the development of an administrative budget program which is intended primarily as a tool for cost reduction and as an incentive for improved efficiency, the following principles should govern, and be a part of, the budget system:

1. Assign unmistakable organization responsibility for all expenses included in the program.
2. Require each responsible executive to develop an annual operating program.
3. Require each responsible executive to thoroughly analyze all elements of the anticipated cost and personnel requirements of his operating program.

4. Develop expense standards or yardsticks to indicate where savings can be made and to provide an incentive for cost reduction.
5. Require each responsible executive to justify his proposed expenditures before the company's principal operating committee. Insure recognition for accomplishment.

Perhaps the most important requirement in a program for cost reduction is the one given first in the above enumeration and implied in the remaining principles, i.e., that the executives of the company responsible for incurring the expenses be clearly identified and that they recognize and accept responsibility for expense control as an integral part of their respective jobs. In most cases, the chief executive of the company and the budget department can only provide the incentive and the tools for good expense control. In the final analysis, it is primarily the executives responsible for utilization of personnel, for supervising the operations, and determining the policies and practices governing the cost of the operation, who can achieve important economies.

In contrast to manufacturing operations, many of the activities covered by administrative budgets represent jobs which are not routine and continuous, and thus are not measurable on a quantitative basis. As a result, an annual operating program is an important requirement on which to build a good budget. Further, as an aid in ascertaining where savings can be made, the responsible executive should have expense standards or yardsticks, usually developed jointly by his staff and the budget department. If these matters are taken seriously and a program adopted under which the responsible executive is required to justify his proposed expenditures before the company's principal operating committee, the basic ingredients for an aggressive expense reduction program are present.

Four Types of Expense: Four Techniques for Budgetary Analysis

From an analytical point of view, there are several types of expenses and related budgets and, therefore, it is not advisable to use one technique or one method in the evaluation of all types. For purposes of this discussion, all administrative budgets have been arranged in four groups, each of which requires a different type of analytical approach. Following are the groups, with typical examples of each:

Appropriation	*Profit and loss*	*Expense standard*	*Administrative*
Advertising	Publications	Sales offices	Industrial relations
Public relations	Printing	Parts warehousing	Purchasing
Engineering	Building services	Loading and shipping	Accounting
Sales promotion	Food services		

The remainder of this paper is devoted to a discussion, with illustrations, of effective means of evaluating the budget amounts for each of these four groups.

Appropriation Type Activities

Definition. Budgets within this group cover activities which do not involved a recurring, administrative type of responsibility but which, in the main, are operated on a program or project basis.

Method. With respect to activities of this type, the following is an effective method of budgetary control:

1. Distribute actual expenses on a project basis.
2. Prepare budgets on basis of projects or programs, including comparisons with previous periods and with expenditures likely to be made beyond the current budget year.
3. Include with the budgets an indication of the results which will be obtained for the amount of money spent on the respective projects.

Illustration

	Proposed expenditures in 1949	*Expenditures in- Previous periods*	*Future periods*	*Total estimated expenditures for project*
Development of reversible propeller	$165,000	$131,000	$151,000	$447,000

The development of budgets on a project basis for appropriation type of expense has the dual advantage of: (1) insuring that the budgeted amounts will be related to the job to be done, and (2) providing the reviewing agency with an indication of what is intended to be accomplished with the requested amount of money. Beyond these basic requirements, the budget department should determine additional important bases of evaluation. For example, an indication of the effectiveness of advertising through the use of Starch reports for magazines, Nielson and Hooper studies for radio, etc., provides helpful information in reviewing proposed advertising expenditures.

The budgetary handling of this category of administrative expense may perhaps be made even more concrete by the following examples of special data helpful in evaluating certain of the appropriation type budgets:

Advertising

1. Analyze by (a) media, (b) product, and (c) program.
2. Convert to dollars per unit or per cent of sales.
3. Compare with previous periods and with competition.
4. Measure the effectiveness of media, current programs, and themes.

Engineering

1. Analyze by (a) product, and (b) project.
2. Convert to dollars per unit.
3. Compare with previous periods and with competition.

Public Relations

1. Analyze by program.
2. Convert to per cent of sales.

Profit and Loss Type Activities

Definition. Budgets within this group generally cover activities of a service nature and it is usually possible to compare the cost of the operation with an outside competitive price.

Method. For activities of this type, the following method is an effective basis of expense control:

1. Establish operations on a clearly segregated basis.
2. Develop forecasts of requirements for services to be rendered.
3. Assess using activities for services rendered, employing *outside* comparative data as a basis for pricing services.
4. Budget expenses (on a variable basis where possible) to control costs within established service prices.

Illustration. Assuming that a company owns the building housing its administrative offices, the costs of which are reflected in the company's administrative expenses, the annual budget would be developed as shown in Exhibit 1 if the method outlined above is used. This arrangement measures the costs of operating the building against what is, in effect, a standard which represents the cost to the company if the building were being rented. In the event that

BUILDING OPERATIONS
Proposed Budget

A. Proposed 1949 Expenses

Estimated Income from Services Rendered		$525,000
Proposed Operating Expenses:		
Salaries	$155,300	
Materials	63,000	
Maintenance	82,400	
Taxes	46,500	
Depreciation	189,800	537,000
Estimated Net Profit or (Loss)		$(12,000)

B. Historical Progress

Period	Total Expenses	Rate Per Sq. Foot
1947	$777,000	$5.18
1948	636,000	4.24
1949	537,000	3.58
Objective		3.20

EXHIBIT 1

present costs are in excess of the standard, the budget can be used to measure the progress of the manager of these operations in reaching the objective and, when the objective is achieved, controlling his costs within the standard. Where the volume warrants it, the use of a similar approach (on a variable budget basis where feasible) is particularly beneficial for such operations as print shops, publications, cafeteria and restaurant services, etc.

Administrative Type Activities

Definition. The administrative type covers activities of the company which have a continuing, routine type of operation but where the work, in the main, is not measurable on a quantitative basis and where payroll represents the most important individual item of expense.

Method. The following is an effective method of developing budgets for activities of this type:

1. Develop annual operating plan in terms of functions to be performed and the anticipated level of activity.
2. *Examine functions in light of the possibility of eliminating those that are unnecessary.*

3. Express operating plan in terms of personnel requirements and dollar costs.
4. Compare with previous periods.
5. Apply yardsticks and factors to traveling expenses, long distance telephone calls, supplies, employees served, etc.

Illustration. See Exhibit 2.

One of the best methods of effecting cost reduction in expenses of administrative type activities is the development of measures designed to persuade and encourage economical efforts on the part of the executives responsible for these operations. Ordinarily the budget department will achieve effective results by the very establishment of procedures and requirements as outlined above. Further, the presentation of the budget in the manner illustrated —after it has been developed and submitted by the activity— will provide the operating executive with a thorough analysis of his

PROPOSED PURCHASING BUDGET

Analysis Summary:

The proposed Purchasing Budget for 1949 is $1,142,000 and provides for 285 employees as of December 31. This represents a reduction in expenses of $110,800 or 8.8% and personnel of 37 or 11.5% from 1948 actuals. $62,800 of the saving represents salaries of the 23 employees saved by combining the purchase research and. . . . . .

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Table 1

Proposed Personnel Strength and Expenses

	Proposed 1949	Actual 1948	(Increase) Decrease
Personnel:			
Salaried	248	278	30
Hourly	37	44	7
Total	285	322	37
Expenses:			
Salaries	$793,600	$889,800	$ 96,200
Supplies	40,700	37,500	(3,200)
Travel	22,900	16,500	(6,400)
Telephone	18,000	15,300	(2,700)
Services Purchased (etc.)	42,400	65,800	23,400

EXHIBIT 2

DETERMINATION OF VARIABLE EXPENSE RATES

Depot: Toledo

DETERMINATION OF VARIABLE EXPENSE RATES

Depot: Long Beach

DETERMINATION OF VARIABLE EXPENSE RATES

Depot: Miami

Function: Stock Handling Expense: Salaries & Wages

	Expenses				
		Fixed and		Sales	Variable Rate
Month	Total	Non-Variable	Variable	Volume	Per Thousand
Jan.	$14,000	$3,000	$11,000	$451,000	$24.40
Feb.	13,500	3,000	10,500	425,000	24.70
Mar.	12,500	3,000	9,500	401,000	23.70
Apr.	10,000	3,000	7,000	380,000	18.40
May	11,000	3,000	8,000	452,000	17.70
June	12,000	3,000	9,000	475,000	18.90
July	14,000	3,000	11,000	501,000	22.00

RELATION OF DEPOT EXPENSES TO VOLUME

Function: Stock Handling Expenses: Sal. & Wages

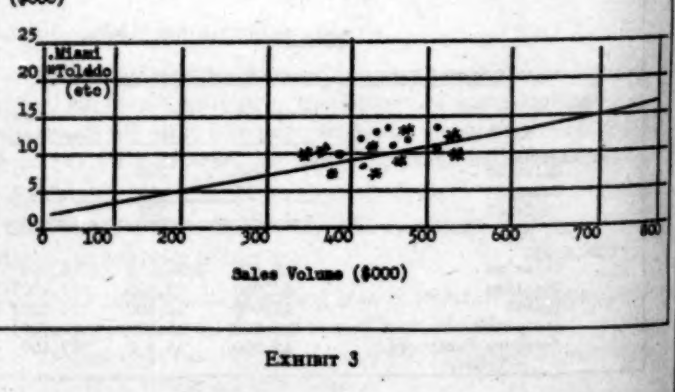


EXHIBIT 3

budget, pointing up areas which appear out of line and giving him credit for the progress he has made in the preparation of this budget. More important, this analysis provides the reviewing agency with a means of evaluating the budget.

Expense Standard Type Activities

Definition. This type covers those activities incurring administrative expenses with respect to which there are a number of installations performing essentially the same function and where the results of the activities can be measured on a quantitative basis.

Method. Probably the best budget for this type of activity is one based on standards developed through industrial engineering analyses; institution of uniform operations and procedures, time studies, and so forth. While such a budget should be the ultimate goal for expense standard type activities, a period of at least one year will usually be required to effect such a program. Where more immediate results are required, it is frequently possible to develop valuable comparative performance measures and, using data on the most efficient installations, to establish standards for application to all installations. The following method has been found effective under such circumstances:

1. Classify operations and expenses into management areas.
2. Arrange for accumulation of actual expenses on this basis.
3. Prepare comparative analysis of historical data.
4. Develop standard budget allowances, using a variable budget system.

Illustration. Assume that a budget is to be established for the parts merchandising activities of a particular company with six warehouse locations. Analysis indicates that the activity logically falls into, say, four functions: stock handling, stock control, accounting, and administrative and service. For each function, in turn, there are such expense categories as salaries and wages, materials, freight, depreciation, utilities, etc. A standard budget allowance, both nonvariable and variable, should be determined for each of these functions, by expense category.

Taking the salaries and wages expense of the stock handling function as an example (Exhibit 3), plot on a single graph the monthly performance of actual expense against volume of stock handled for each of the six warehouses for the preceding twelve

months. A standard can then be selected on the basis of the pattern set by the 72 plottings, using, say, the most efficient one-third. This standard should then be reviewed with operating supervision and, after necessary revisions have been made, given to the six warehouse managers as their standard budget allowance.

Standards set in this manner are particularly effective on a variable budget basis where this is practical. As indicated in the above illustration, variable budget standards have the important advantages of:

1. Providing an incentive to the management of the operations which are out of line, and
2. Indicating the high cost installations to central management for its immediate action.

Control of Administrative Costs A Profitable Endeavor

In closing, it might be noted that many companies are now giving more attention to controlling administrative and commercial expenses than they have in the past. Naturally the amount of money and effort expended for such budgeting and cost control must be related to the expected cost savings. It has been my experience, confirmed by others in this field, that wherever such attention and effort has been given, the resulting savings have paid for the cost of the program many times over.

CONTROL OF CAPITAL EXPENDITURES—PLANNING AND FOLLOW THROUGH

by P. M. CHIUMINATTO,
Secretary-Treasurer, Hoberg Paper Mills, Inc.,
Green Bay, Wis.

Prefaced by the thought that the high level of capital outlays of the present and the prospect for its continuance into the immediate future, renders planning of such expenditures a matter of prime importance, this presentation offers a procedure designed to encourage early and selective consideration of proposed projects, adequate progress control of those undertaken, and retention of sufficiently detailed accounting records of projects upon completion.

IN the last few years, and probably for many years to come, the control of capital expenditures is going to assume larger and larger proportions. This is principally due to the fact that the cost of such expenditures is currently absorbing about 75 per cent of the earnings of corporations, apart from depreciation provisions and the costs of a considerable amount of new financing. In many cases the solvency of the company depends upon its ability to modernize and increase its productive capacity and the quality of its products.

However, this paper does not intend to deal with the whys or wherefores of capital expenditures but is intended to outline a system of control which will give top management the information needed to determine whether or not its policy on capital improvements is being carried out according to plan. The material reflects the procedure followed in our company. We are proud of what it has accomplished and sincerely hope that those who read this article will obtain something of benefit for use in their own daily work.

Required Information: Departmental Requests and Cash Forecast

About October of each year the preliminary work on the next year's capital expenditures takes place. A meeting or a series of meetings is held with top management, vice president in charge of operations, engineers, repair and construction foreman, superintendent, and department heads, to determine what will be needed

in each department in the way of capital improvements. Each individual is notified in advance of the meeting so as to come prepared to submit his request for capital improvements along with the estimated cost, savings to be realized, improvement in quality to be attained, or any other information he deems necessary or pertinent to his request. These requests are broken down into three categories:

1. Absolutely essential to maintain operations.
2. Those which will improve quality.
3. Those which will improve volume of production.

By this time the treasurer of the company has submitted to this committee a cash forecast in detail for the coming year and a condensed cash forecast for the next four years, making in all a five-

CAPITAL EXPENDITURE PRIORITY SCHEDULE

ABSOLUTELY ESSENTIAL:	
Rebuild wet end of No. 2 machine	$ 15,000.00
Replace No. 1 digester with new one	35,000.00
New roofs on No. 1-2-3-4 Buildings	10,000.00
New Wrapping Machines (1)	12,000.00
New Rewinders (2)	10,000.00
New Warehouse	40,000.00
Complete Power Plant	50,000.00
	$ 172,000.00
QUALITY IMPROVEMENT:	
New Embossing Rolls - No.4-5-Machines	$ 10,000.00
New Bleaching Tanks	20,000.00
Single Roll Wrapper	12,000.00
New Label Printing Machine	30,000.00
	$ 72,000.00
OTHER EXPENDITURES:	
New Grinder -- Groundwood Plant	$ 15,000.00
New Drive for No. 3 Machine	10,000.00
Office Equipment	4,000.00
Salesmen Automobiles	20,000.00
	$ 49,000.00
TOTAL	$ 293,000.00

EXHIBIT 1

EXPENDITURE CONTROL SHEET

CAPITAL EXPENDITURES

Description Build new Digester in No. 4 Building

Started April 1, 1948 Completed November 1, 1949

Estimated Cost $ 35,000.00

Order Numbers: Revised Cost 41,000.00

Actual Cost 46,000.00

1721	May
1792	Oct
1865	May
1894	Oct
1920	June
1977	Sep.
2030	Oct
2041	June

	MONTH	YEAR	TOTAL
Totals	1948 forwarded		6000 00
Jan.	7000 00	7000 00	13,000 00
Feb.	2000 00	9000 00	15,000 00
Mar.	4000 00	13,000 00	19,000 00
Apr.	1000 00	14,000 00	20,000 00
May	5000 00	19,000 00	25,000 00
June	5000 00	24,000 00	30,000 00
July	4000 00	28,000 00	34,000 00
Aug.	6000 00	34,000 00	40,000 00
Sept.	5500 00	39,500 00	45,500 00
Oct.	500 00	40,000 00	46,000 00
Nov.			
Dec.			

Reason for Expenditure Replace old No. 1 Digester and increase daily production by 12 tons a day.

Estimated Annual Saving $ 20,000.00 43% on Investment

Actual Annual Saving $ 18,000.00 39% on Investment

EXHIBIT 2

year cash forecast. This is necessary so the committee can determine how much money will be available for capital expenditures and, if there is not enough to take care of all the requests, can allocate those outlays which have to be postponed to some specific year in the future. This encourages future as well as present planning on the part of everyone.

Establishing Priority of Projects

With the requests and the five-year cash forecast on hand, the committee goes to work. First of all, approval is given to all those items which are absolutely essential to the continuance of present standards of operations whether or not they improve quality or volume of production. The next thing is to consult with the sales department on products in which quality improvement is necessary to maintain the company's competitive position or even improve it. All the other items are then listed according to the time required to repay the original cost. Those which will recover their cost in one year are given an "A" priority, those which will recover their cost in two years a "B" priority, and those which will recover their cost in three or more years are given a "C" priority. As a result, we have a schedule which looks something like that shown in Exhibit 1.

This schedule is supported by data on each item which gives in detail all the facts regarding the project. Top management makes the decision on how much money will be spent. For present purposes, we will assume there are sufficient funds to approve all the projects listed. When this information is conveyed to the construction and engineering departments, they know that all projects are to be undertaken and are ready to proceed. It might also be mentioned that each year there is an unallocated lump sum included in the budget to take care of emergencies which crop up or to take care of underestimates on the projects which have been approved.

Expenditure Control Sheet for Top Management

The engineering department then takes this list of approved construction jobs and prepares for each one a sheet as is shown in Exhibit 2. These are filled by departments in a loose-leaf, three-ring binder. Copies are sent to top management and the vice president in charge of operations. The engineering department keeps one copy for itself. As is evident from inspection, this sheet in-

JOB STATUS REPORT

To -- Top Management
Vice-Pres. in Charge of Operations
Engineering Department

DATE -- MAY 15, 194

The following jobs were scheduled to start on April 1 and as of this date are not yet started.

Rebuild Wet End of No. 2 Machine
New Warehouse
H.S. Single Roll Wrapper
New Drive for No. 3 Machine

The following jobs were to be completed by May 1, and are not yet completed.

Lawton Automatic Wrapper
New Grinder in Groundwood Plant
New Label Printing Machine

The following jobs have been completed.

	Actual Cost	Estimated Cost	Difference
Replace No. 1 Digester	$ 46,000.00	$ 41,000.00	$ 5,000.00
New Roofs No. 1-2-3-4 Bldgs.	10,000.00	10,000.00	
Complete New Power Plant	60,000.00	50,000.00	10,000.00
Salesmens' Automobiles	24,000.00	20,000.00	4,000.00
	$ 140,000.00	$ 121,000.00	$ 19,000.00

Comparison of Estimated Savings:

	Actual	Estimated	Difference
New Power Plant	$ 18,000.00	$ 16,000.00	$ 2,000.00
New Digsterr	20,000.00	18,000.00	2,000.00

EXPENDITURE SURVEY

Funds needed to complete jobs now under construction	$ 70,000.00
Funds needed to complete jobs not started	30,000.00
Allowance for error in estimates 13%	13,000.00
	$ 113,000.00
Depreciation for balance of year	90,000.00
Cash from working capital or profits	$ 23,000.00

EXHIBIT 3

cludes a description of the job, the time it is to be started, and the time it is expected to be finished. It shows the original estimated cost, any revision of this cost due to unforeseen conditions or expansion of the original idea and, finally, it shows the actual cost. The left-hand side of the page contains a space for the order numbers to be used on the job, as well as the date they are completed. There are monthly totals of labor and supplies, a year-to-date column, and a column to carry over totals if the job runs for more than a year. At the bottom of the page is given the reason for the expenditure, how much it is expected to save, as well as actual savings realized. This form is the core of the control which management exercises over the effectiveness of those responsible for its construction program. It answers the questions:

1. Did the job start on time?
2. Did it finish on schedule?
3. Did it cost more than was estimated?
4. Was the result as good as expected?

There is no doubt but that with a check of this sort on those responsible for the expenditure of funds for capital improvements, a company is going to get more for its money. By the fifteenth of each month the actual expenditures for the respective jobs are entered on the sheets and a report is made to all concerned along the lines of Exhibit 3.

Backed with this information and knowledge, top management is in a position to inquire and find out why jobs are not started on time, why they are not finished, and why they have not resulted in the savings expected. There is also a check on the efficiency of the estimating department, as well as the knowledge that actual costs on jobs completed thus far are, for example, $19,000 more than estimated, and that in all probability more money will have to be allocated by the board of directors or some of the jobs not yet started will have to be cancelled. The availability of this information by the fifteenth of each month renders it current enough to be effective.

Accounting Control

What has been stated so far relates to the managerial control of capital expenditures. The other aspect of the problem, continuous accounting control to extend not only through the life of the pro-

No. Div. B

Description _____

Started Date _____

Finished Date _____

Purchased From _____

	Date	Invoices	Stores	Labor	Total
Engineering Estimate					
Machinery Retired					

EXHIBIT 4

jects but through that of the resulting assets as well, is perhaps equally important. As the engineering department personnel issues the various orders for construction projects, they also make out a folder, illustrated in Exhibit 4, which contains much the same information as the expenditure control sheet (Exhibit 2) and, in addition, provides for record of any equipment which might be retired in connection with the project. The folder is sent to the accounting department where, as a first step, the job designation is checked against the master list of approved expenditures and, if it has been previously approved, it is automatically passed on to the next step. If it is not on the approved list of expenditures, it is sent to the treasurer's office for approval. Here it is either approved or rejected, but in either event it goes back to the accounting department for cancellation or for filing in the live construction file in numerical order.

Into this folder each month go the labor summaries and duplicate invoices and requisitions for material used on the job, the total sum of which is posted on the outside of the folder. When the job is completed, the folder is totaled and the proper accounting entries are made. The information inclosed in each folder answers a variety of questions from time to time as to what has and what has not been charged against the job, and often forms the basis of a necessary revision in the estimated cost.

Procedure Forces Advance Planning

The whole procedure—from planning and approval of projects to accounting for and control of outlays under projects approved—forms a rather simple but effective method of over-all control. It requires advance thinking with respect to projects to be taken on and it gives current control over the related jobs while they are in progress. It also affords a check on the efficiency of the construction department, the estimating department, and the purchasing department. Moreover, from the financial end, the treasurer knows at all times whether or not more money is going to be required to carry out the program and, if the cash is not readily available, the setup gives him time to plan for the necessary steps to secure the funds needed.

UNIT OF EQUIPMENT COSTS FOR TRUCK LEASING OPERATIONS

by HARRIS SAUNDERS,
Vice President, Dixie Drive-It-Yourself System,
Birmingham, Ala.

In this article a practical basis is outlined for answering the question, asked in companies in many lines of business, "What does it cost to operate the individual vehicles in our truck fleet?" Two principal groups of operating costs are set forth and the major items of expense within these groups are given separate treatment. Effective use of cost standards for several of these is described.

AUTOMOBILE and truck costs and the control of these costs are subjects that concern each of us personally and is a problem with which most of us come in direct contact in our businesses. Transportation is a universal problem and automobiles and trucks take care of a large percentage of the transportation needs.

Our business is divided into three main departments; first, the rental of passenger cars without drivers on a temporary basis ranging from an hour or two up to several weeks or months; second, the rental of trucks in the same manner for hours, days, or weeks and, third, the leasing of cars and trucks under long time contracts that run from one to four years or longer. In each department we not only rent the vehicle but also furnish all gasoline, oil, tires, maintenance, servicing, insurance, and in fact everything except the driver. On the long-term lease we purchase the make and type of truck the customer wants, equip it, paint it, and letter it in accordance with his specifications and give him exclusive use and control of the truck or fleet of trucks during the continuance of the lease. We have eighteen stations or buildings in ten cities, with headquarters in Birmingham, and approximately 800 passenger cars and 1700 trucks.

Time and Mileage Costs in Costing and Rate Setting

Before getting into the discussion of plans and methods that we use in keeping costs and in controlling costs, we might first discuss

the general nature of automobile and truck costs. They divide themselves into two main classifications.

1. Those costs which accrue largely without regard to the operation of the vehicle. They are the fixed and semifixed costs, including garaging, license tag and ad valorem taxes, various kinds of insurance, costs of painting and lettering, washing and polishing, and the important item of depreciation, which in most cases accrues by the lapse of time rather than mileage.
2. Costs that accrue because of the rolling of wheels, the running of the motor, the use of the transmission and differential, and the general operation of the vehicle. These costs are repairs (both maintenance and damage repairs), tires (including replacement tires, tire repairs and recaps, and tire road service), gasoline and oil, and lubrication. Grouped with repairs we have the cost of substitute trucks and the cost of carrying spares.

It will be noticed that the first group of costs all accrue by the lapse of time and the second group through mileage traveled by the vehicle. Recognizing this fact, we not only set up our costs divided between these two main divisions, but also base our rental and leasing rates on them by always making our rates a combination of time and mileage charges. For instance, a lease rate on a small truck, including complete service, fuel, maintenance, insurance, etc., might be quoted as $15.60 per week plus $.05 per mile. The $15.60 would take care of the first group of costs and the $.05 would cover the mileage cost items. Of course, the specifications of each lease will vary and we compile a special rate for each truck or fleet of trucks on which we make a quotation. We use a rate estimating sheet to which we apply our costs and add a profit.

Since our rate to a customer must be in line with what his costs would be if he operated his own trucks, we must make our profit by seeing that we secure all the advantages of large fleet operation, including the efficient operation of complete repair and body shops and taking full advantage of wholesale purchasing, etc.

Individual Truck Costs A Necessity

To keep this case study within compass, we will confine our discussion to the city of Birmingham where we maintain for rental

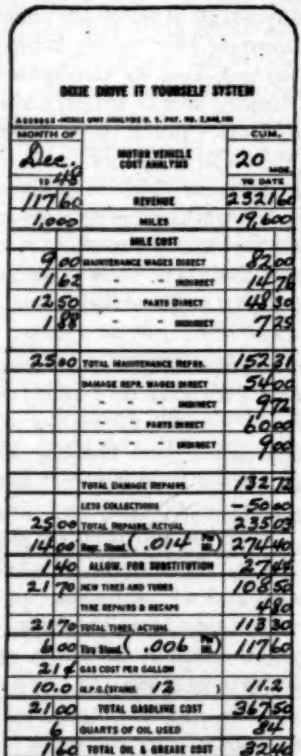
and lease some 500 cars and trucks and we will further narrow it to our Sixth Avenue building where we have approximately 170 trucks of various sizes, makes, and types, all of which are on lease. The specific problem then is to determine how we can know our profit or loss at this particular building, how we can know our profit and loss on each individual truck or fleet of trucks, and how the cost can be controlled so as to insure a profit. In considering this, it must be kept in mind that these 170 trucks are leased to 82 customers who are engaged in 27 different kinds of businesses. Also, there are five different makes of trucks ranging from small one-half ton pickups to trucks that are factory rated at 1½ or 2 ton capacity but carry up to 5 or 6 tons. The body types range from little open express bodies to special bottlers' bodies and furniture vans.

This variety of size and type makes it at once obvious that average costs would be meaningless. We do make up monthly operating statements on each building to indicate the results at the building. We might show for this Birmingham Building No. 3 a profit of $1,380.32 for the month but with 170 trucks of various sizes and types with varying rates, we might easily be losing on some, making on others. Truck costs, no matter what the size or type of fleet, should be kept on the individual truck. We believe in a separate cost sheet for each truck and in allocating all costs, including those that accrue by the lapse of time as well as the mileage costs. If we want the results or cost of a fleet of six trucks, we get it by adding the figures of six individual cost sheets.

The Truck Cost Record

We are now ready to narrow this case study down to an individual truck. We will therefore concentrate a bit on Truck No. 460 which is a ½-ton Chevrolet panel truck leased to the A. & B. Co. Exhibit 1 is the cost sheet for this particular truck. It will be noticed that it shows not only the cost but also the revenue from the truck and the profit. It is therefore really a complete profit and loss statement for this vehicle. Of course, in the general run of businesses maintaining truck fleets for their own use the revenue for a vehicle would be a nonexistent factor and only the cost record would be maintained. Note that this cost sheet is for the month of December 1948 at the left-hand side and is cumulative for 20 months on the right-hand side. The truck has been in

Truck Cost Record



DIXIE DRIVE IT YOURSELF SYSTEM

MONTH OF	MOTOR VEHICLE COST ANALYSIS	CUM. 20 48 MOS. TO DATE
Dec. 48		
1176.00	REVENUE	23216.00
1,000	MILES	19,600
	MILE COST	
9.00	MAINTENANCE WAGES DIRECT	82.00
1.62	" " INDIRECT	14.76
12.50	" PARTS DIRECT	48.30
1.88	" " INDIRECT	7.25
25.00	TOTAL MAINTENANCE REPRS.	152.31
	DAMAGE REPR. WAGES DIRECT	54.00
	" " " INDIRECT	9.72
	" " PARTS DIRECT	60.00
	" " " INDIRECT	9.00
	TOTAL DAMAGE REPAIRS	132.72
	LESS COLLECTIONS	-50.00
25.00	TOTAL REPAIRS, ACTUAL	235.03
1.— 14.00	Engr. Stand. (.014 Per Mi.)	274.40
2.— 1.40	ALLOW. FOR SUBSTITUTION	27.44
2.70	NEW TIRES AND TUBES	108.50
	TIRE REPAIRS & RECAPS	4.80
2.70	TOTAL TIRES, ACTUAL	113.30
3.— 6.00	Eng. Stand. (.006 Per Mi.)	117.60
2.1¢	GAS COST PER GALLON	
10.0	M.P.G. (STAND. 12)	11.2
4.— 21.00	TOTAL GASOLINE COST	367.50
6	QUARTS OF OIL USED	84
5.— 1.60	TOTAL OIL & GREASE COST	32.46
100	GALLONS OF GAS USED	1,750
44.00	MILE COST & Tire Standards	81.93
.044c	COST PER MI. (STAND. .0410)	.0418

		FIXED AND SEMI-FIXED COST	
6.—	2.75	DEPRECIATION	55.12
7.—	1.25	SPECIAL EQUIPMENT	25.00
8.—	2.50	PAINTING & LETTERING	50.00
9.—	7.06	L. & P. D. INS.	139.30
10.—	.85	P. D. & T. AND COL. INS.	22.00
11.—	2.79	LICENSE TAG	45.60
12.—	.80	OTHER LICENSES & TAXES	1.60
13.—	3.90	WASHING & POLISHING	76.62
14.—	6.00	GARAGING	120.00
15.—	3.30	INTEREST ON INVESTMENT	83.70
16.—	4.03	CENTRAL OFFICE	81.24
17.—	8.64	OTHER OVERHEAD	172.80
	43.80	TOTAL FIXED & SEMI-FIXED	1382.76
		PAINTING AND LETTERING - ACTUAL (Ex. Renew.)	
	112.80	TOTAL COST (Current Type)	2202.20
	4.80	PROFIT OR LOSS*	119.44
	4.1%	PROFIT PERCENT TO REVENUE	5.1%
		DRIVER	
		John Smith	
1556.00		NET COST OF UNIT	1556.00
86.80		LESS VALUE OF TIRES	86.80
1469.20		BAREFOOT COST	1469.20
19		AGE IN MONTHS	20
9456		VALUATION BAREFOOT UNIT	9180.00
6.50x16-6		FRONT - TIRES - REAR	6.50x16-6
Q.8.Co.		LEASED TO	Q.8.Co.
15.60	PER MI.	PER MILE RATE	.05
4-30-51		EXPIRATION	4-30-51
B'Ham.		CITY	B'Ham.
3		BUILDING NUMBER	3
460		UNIT NUMBER	460
Chev.		MAKE	Chev.
½ Ton Panel		TYPE	½ Ton Panel

Note: This form is actually one continuous strip. However, for display purposes it has been divided into two sections.

1. A separate cost sheet on each truck each month
2. Made up in pencil with one-time carbon. Copy to garage superintendent.
3. Adapted to cross adding on pegboard for fleet totals and statistics by types of trucks, lines of business, etc.

Exhibit 1

service for this length of time and the cumulative figures show the revenue, cost, and profit for the whole period. Revenue of $117.60 and 1,000 miles of operations show in the month column and $2,321.60 revenue and 19,600 miles of operation appear in the cumulative column. As to cost, the form condenses the many items that go to make up truck cost into seventeen main accounts, five of which are the mile cost items that we have discussed and twelve constitute what we call fixed and semifixed (or time) costs. These seventeen elements of cost will be reviewed briefly in the remainder of this article in the order of their occurrence on Exhibit 1 so as to show the method of allocating them to the individual trucks and to show the methods of cost control.

Mileage Costs

Repairs: Use of Cost Standards

Repair cost is the first main cost item on the sheet and about a dozen lines are devoted to the breakdown of actual repair costs as reported on shop orders. However, as with tire costs also and as explained more fully in the next several paragraphs, the actual costs are used only for comparison with standards incorporated in Exhibit 1 and included instead of the actuals in totaling truck costs (*unit* standards are likewise shown for gasoline but actual cost is added into the total).

For the month of December the total repairs amounted to $25 but just below and in contrast is a repair standard figure of $14 which was arrived at by multiplying the repair standard per mile of .014 times the 1,000 miles that the truck ran in December. It is this repair standard of $14 and not the $25 of so-called actual repairs, that we add into the cost. On the right-hand side of the cost sheet, for the twenty months of accumulated experience since the truck has been in service, we show total repairs, actual, of $235.03 after subtracting $50 collected from the customer for his share of a $132.72 accident which occurred at some time during the twenty months. This actual repair cost figure of $235.03 for the twenty months, including maintenance and damage repairs, is contrasted on the cost sheet with the repair standard of $274.40 which is arrived at by multiplying the per mile repair standard of .014 by the 19,600 miles traveled by the truck during the twenty months.

It might be well at this point to discuss briefly the limited but effective use of standards implied in the foregoing comments. Our

trucks are usually leased for a period of four years with certain cancellation privileges. A special rate is arrived at for each truck or fleet of trucks based on the truck specifications and cost, the estimated mileage, probable load, nature of use, etc. For instance, in arriving at the rate for Truck No. 460, leased to the A. & B. Co., our repair experience tables, covering many trucks and many hundreds of thousands of miles on similar trucks in similar use, gave us a per mile repair estimate or standard of .014 per mile. This figure therefore became the repair standard for this particular truck against which we compare the actual throughout the four-year life of the truck.

Since the .014 is a per mile standard for the full four-year period as the truck gets older, we should be well under our repair standard during the first half of the 48 months' lease. Truck No. 460, under review, shows actual costs under its repair standard for the first twenty months in spite of the damage. This excess of standard over actual we speak of as a repair reserve. If this repair reserve is not substantial during the first and second years of the life of the truck, we want to know why. If actual repairs exceed the standard as they did on this truck for the month of December, explanation is required from the building manager and shop foreman. Throughout this narration, it should be kept in mind that the cost sheets are made up in pencil, using one-time carbon, and building managers are given carbon copies so that they have the complete record exactly as we have it in our central office.

Other Mileage Costs

Spare or Substitute Trucks. The next item of cost is the substitution of trucks when the leased unit is out of service for any reason. We allocate this cost as a percentage of repairs and in this case ten per cent of repairs has been used.

Tires. Tire cost is the next item. Here again we use a per mile cost standard based on our experience tables showing the tire cost experience of similar trucks in similar use. This cost covers not only new tires and tubes but tire repairs and recaps and tire service calls. On Truck No. 460 the tire standard is .006 cents per mile and, since the truck ran 1,000 miles in December, the tire standard was $6. The cost sheet shows that during the month of December $21.70 was spent for a new tire and tube but instead of

adding that into the cost for the month we add the $6 tire standard. For the twenty months the standard of .006 cents per mile applied to the 19,600 miles produced a dollar and cents standard of $117.60, as contrasted with actual tire purchases (including the original set that came with the truck) of $113.30.

Gasoline. We keep a daily record of number of gallons put into each truck and in this case we find that we used 100 gallons during the month and, since our cost was 21 cents per gallon, we have a total gasoline cost of $21. Also, since the truck ran 1,000 miles we find the miles per gallon were only ten against a miles per gallon standard of twelve. For the twenty months, the truck used 1,750 gallons producing a miles per gallon average of 11.2, which is closer to the standard. The ten miles per gallon figure for December calls for immediate and definite action and we find that correction is possible and very helpful.

Lubrication. The last of the five direct mile cost items is oil and grease, including complete lubrication of the truck. Charts are kept on the oil used in the various trucks and shop orders show the lubrication jobs.

Totaling Mileage Costs

The total of the mile cost items on this truck for December shows as $44 or .044 cents per mile for the 1,000 miles traveled. If we had added into this cost the actual repairs and actual tires instead of the standards, we would have had a cost for the month of $70.70, or a cost per mile of .0707 cents. On the basis of costs over the operating life of the truck, these results would have been definitely distorted ones.

Costs Accruing With Time

Depreciation

The final twelve cost categories shown on Exhibit 1 are there designated as "Fixed and Semifixed Cost." Depreciation is the first of these items and we include it in this classification because, on trucks doing moderate mileage, we find the depreciation occurs largely by the lapse of time rather than mileage traveled. We use a straight-line method for cost sheet purposes, depreciating the "barefoot" truck after subtracting the value of the original tires that come with the truck. Near the bottom of the cost sheet, just

below the name of the driver, the cost of Truck No. 460 is shown as $1,556 from which is subtracted the value of the tires, giving a "barefoot" cost of $1,460.20. From this a ten per cent salvage value is also subtracted and the result divided by 48 to get the monthly depreciation figure of $27.56.

On our general books we use a declining depreciation method, charging off more the first year than we do the second, and more the second year than we do the third. We also use actual repair costs on the general books and, with repairs increasing and depreciation decreasing as the truck gets older, we get about the same effect as we do on the cost sheets in using a straight-line depreciation coupled with a repair standard. On the cost sheets, however, the use of the repair standards and other standards gives us more effective cost control.

Other Time Costs

Special Equipment and Painting and Lettering. The next two items, special equipment and painting and lettering, are simply a lease period proration of actual costs of painting and lettering this particular truck.

Insurance. Liability and property damage insurance is accurately charged each month to the individual truck because our premiums are a percentage of revenue the truck brings in. However, if a flat annual premium is paid it also can be accurately allocated. Fire and theft insurance is a set figure, changed once a year as the truck gets older, and is accurately charged monthly to the truck.

License Tags and Other Licenses and Taxes. Each truck's actual tag costs for the year is divided by twelve to get the monthly charge. Other licenses and taxes include a proration of the various licenses and taxes, not including income taxes. This item is fairly low in this instance because the license tag carries the ad valorem tax.

Washing and Polishing. Charts are kept on washing and polishing, posted from daily work cards, and at the end of the month the number of actual washes and polish jobs on the particular truck are multiplied by the standard cost of these items to arrive at a charge for the month.

Garaging. Garaging is an approximation of actual cost including cost of rent or ownership of the building plus such items as light, heat, porter supplies, building maintenance, etc. This item is never allowed to exceed a reasonable charge for garaging that might be charged in a similar neighborhood and is not allowed to include idle space in a building.

Interest on Investment. Interest on investment is included in this case at four per cent of the actual depreciated value of the truck without any consideration of investment in accounts receivable, housing facilities, shop equipment, etc. We include interest on investment because we believe it to be a real item of cost that our customers must include in comparing truck ownership with truck leasing, in view of the fact that leasing eliminates the capital investment and releases capital.

Accounting, Purchasing, General Wages, Supervision. "Central Office" covers all expenses of our general accounting, cost accounting, purchasing, and other central office costs. "Other Overhead" includes many items which are really not generally considered overhead, such as the cost of service men who garage the trucks, fill them with gasoline, check oil, water, and batteries, inflate tires. This also includes shop supervision and the building superintendent.

Summarizing Individual Truck Costs

The total of these fixed and semifixed costs is $68.80, for Truck No. 460 for the month of December. This amount added to the direct mileage cost of $44 gives us a total cost for the month of $112.80. Subtracted from the revenue of $117.60, this leaves a profit for the month of $4.80, or 4.1 per cent of revenue. This profit is before management's profit-sharing bonuses and before income taxes.

Importance of Cost Control in Truck Leasing Operations

When it is considered that we must have a profit and still charge the customer a rate low enough to approximate his owner-operated cost, it will be realized how important cost control and cost reduction is to us in terms of everyday operation. Of course, if a company owns a truck or several trucks, it usually does not have a large enough fleet to maintain a garage with mechanics, shop equipment,

wash rack, gasoline pump, etc., and so does not have the advantage of fleet operation that we have. Even if a sizable fleet is maintained it is usually a sideline to the main business, and buying power on such items as tires, gasoline, etc., does not yield maximum discounts.

Besides complete maintenance and repair shops we have our own complete painting and body repair shops. Our job is to see that the purchasing discounts available to us and other cost advantages entirely offset our management overhead and profit. Good cost records and cost control are doing this for us and for our customers.

COMING ARTICLES

In the *N. A. C. A. Bulletin*, April 15, 1949

Application of the Price Index Adjustment Concept to Depreciation Charges

by Michael Schiff

An Effective Group Incentive Plan for Smaller Companies

by Arthur L. Bennett

A Procedure to Improve Customer Statements and Expedite Accounts Receivable Agings

by Angelo J. Rallo